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rience), from below or from above?—for both types of experience are *at least* subjective and physiological. Rather, the question is, Are they *also* objective and spiritual (or physical, as the case may be)? Professor Coe and Mr. Wells are quite right in stressing the point that the answer to this, if it is to be a philosophical answer, is a matter of after-interpretation: that, in the case of mystical experiences, the *fact* is the experiencing itself, and the belief that God is experienced is a doctrinal *interpretation* of that fact. But let us note two points: (1) precisely the same thing is true of physical experiences; and (2) that it is true in either sense only when we need a *philosophical* justification of our beliefs, for ordinarily both physical and spiritual experiences are accepted at once by the experiencer as valid, the vividness of the experience being taken by plain man and scientist alike as proof of its validity, and the latter called in question only by the philosopher. Both physical and spiritual experiences, then, are verifiable on the same grounds—consistency with one another and with later experiences, reasonableness, objectively valuable results, or what not; and there is nothing any more “false” in “attributing” mystical experiences to God than in attributing sensory experiences to matter, provided the proper tests are carried out when doubt of their validity is suggested.

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REVIEWS AND ABSTRACTS OF LITERATURE

The Continuum and Other Types of Serial Order. EDWARD V. HUNTINGTON. Second Edition. Cambridge, Mass.: Harvard University Press. 1917. Pp. 82.

This book, the first edition of which appeared in 1905 as a reprint from the *Annals of Mathematics*, has long been the chief text and reference book of those American students who desire an acquaintance with the important subject of the theory of aggregates. It is, therefore, very pleasant to see the old edition (which was out of print, and in certain matters, such as those involving Zermelo's axiom, pertained to a theory which since then has undergone notable developments) supplanted by what is probably the handiest and most up-to-date brief treatment of the subject in existence. From a purely material point of view, the present neat manual is a great improvement on the large flimsy paper-back that constituted the first edition.

Chapter I is devoted to classes in general. There is no attempt

to enter into the more abstruse logical questions that arise in this connection, but all the definitions are carefully framed, and express the intended notions as well as is possible without explanations of a complicated character. Brief mention is made of relations and operations, after which the definition of systems is given. Huntington, after his accustomed manner, defines a system by mentioning not only its organic relation, but the class of entities this organizes. This is convenient for pedagogical purposes, but is essentially redundant, since, in specifying the relation, one has already determined the entities with which it is to concern itself.

The next chapter, which treats of the general properties of series, follows the usual method of handling the subject. Like the entire book, it contains a large number of good examples which serve both to render clear to the reader the exact meaning of the postulates and definitions employed, and to develop the independence and consistency proofs for the system. The purely mathematical examples are always satisfactory, but those drawn from other fields occasionally involve unwarranted assumptions. On page 16, the temporal order, the order of sensations arranged according to their intensity, the causal order, and the order of moral values are all given as examples of series, in the technical mathematical sense. The serial character of the temporal order has been questioned by A. A. Robb¹ on grounds connected with the theory of relativity, while the existence of sensation-limina should make the serial character of sensation-intensity extremely doubtful. Similar remarks apply to cause and moral value.

Chapter III concerns itself with discrete series. The treatment is original in that Dedekind's postulate is substituted for the property of permitting mathematical induction in the definition of a discrete series. The property of inductivity is proved in a simple and interesting manner.

In Chapters IV and V dense denumerable and continuous series are discussed after the manner of Dedekind rather than that of Cantor, although the linear continuum is distinguished from other varieties, and the definitions of the Cantorian theory are related to those of Dedekind. Chapter VI contains a very interesting discussion of what are in the true sense continuous series of more than one dimension—series which are continuous in Dedekind's sense, but not linear. Such series are carefully distinguished from the multiply ordered classes which are not, strictly speaking, series at all.

The last chapter, Chapter VII, is devoted to the theory of well-ordered series. It avoids all those dangers which are due to the ease of unwarily introducing Zermelo's axiom without recognizing

¹ *A Theory of Time and Space*, Cambridge, 1914.

it. However, the statement in paragraph 82, to the effect that " . . . the various types of well-ordered series, when arranged 'in the order of magnitude' . . . form a series with respect to the relation 'less than,' and as Cantor has shown, this series is itself a well-ordered series," is one of the horns of Burali-Forti's dilemma, and has been denied by Whitehead and Russell, on grounds connected with their theory of types. The chapter ends with Hartog's interesting reduction of the principle that any class can be well ordered to the principle that of any two classes, one is similar to part or the whole of the other. Though there is no misunderstanding involved, it is a trifle misleading to call this, as Huntington does, a proof of the former principle.

The book is not a piece of original research in the large sense, and does not claim to be, though it contains many pretty examples of Professor Huntington's mathematical tidiness; accordingly it pays much more attention to the manner of presenting the subject than do the original monographs from which it draws, for its purpose is rather to clear old trails for the beginner than to blaze new ones. Though there is no attempt at dealing with the various logical and mathematical puzzles which make this field so interesting to the philosopher, one will find here a mass of information, presented in a manner intelligible to the non-mathematical reader, which will enable him to follow the more abstruse discussions of these matters in other works with far more ease than would otherwise be possible.

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JOURNALS AND NEW BOOKS

THE AMERICAN JOURNAL OF PSYCHOLOGY, July, 1917.
From Home to the Charge: A Psychological Study of the Soldier (pp. 315-348): CHARLES BIRD.—The citizen in becoming a soldier must forget himself and lose his social identity as he enjoyed it in private life. The camps cause him to lose his individuality and self-assertion. The intense changes make the soldier primitive and often vulgar. Fear is forgotten in the struggle for self-preservation, but possesses the soldier in the retreat, which often becomes a panic. The social psychology of war is discussed. Bibliography. *Visual, Cutaneous, and Kinesthetic Ghosts* (pp. 349-372): P. F. SWINDLE.—Visual, cutaneous, and kinesthetic ghosts are explained in terms of after images of long duration with elements of imperfect perception. *Psychological Tests for the Authorship of the Book of Mormon* (pp. 373-389): WALTER FRANKLIN PRINCE.—If there were no historical records about the origin of the Book of Mormon, psychological